a dielectric solid film positioned between a portion of the shaft and the ultrasound transducer.

29. (twice amended) A medical catheter for insertion into a body, the catheter comprising:

a shaft;

an electrical conductor connected with a transducer within the shaft; and

a non-conductive braid connected with the shaft to transmit torque to the shaft wherein the ultrasound transducer is positioned in a tip portion of the shaft, the tip portion of the shaft being free of the non-conductive braid.

Please add claim 48 as follows:

--48. A medical diagnostic ultrasound catheter for imaging from within a body, the catheter comprising:

a shaft;

an ultrasound transducer connected with the shaft;

a dielectric film positioned between a portion of the shaft and the ultrasound transducer; and

a lens adjacent the ultrasound transducer, wherein the dielectric film is positioned between the lens and the ultrasound transducer.--

REMARKS

In the Office Action, the Examiner rejected claims 1, 4-10, 12-16, 21-24, 28-29, 32-35, 38 and 42-46 pursuant to 35 U.S.C. § 102(b) as being anticipated by Hamm et al. (U.S. Patent No. 5,368,035). Claims 2-3, 11, 17-20, 26-27, 30-31, 36-37 and 39-41 were rejected pursuant to 35 U.S.C. § 103(a) as being unpatentable over Hamm et al. Claims 25 and 47 were objected to as being allowable if rewritten in independent form.

Claims 1-14 and 29-37:

Claims 1-14 and 29-37, including independent claims 1, 10 and 29, were rejected as being anticipated or obvious over Hamm et al. Applicants respectfully request reconsideration of the rejections for these claims for the reasons discussed below.

Independent claims 1 and 29 require that the tip portion of the shaft with the transducer be free of the non-conductive braid. Hamm et al. suggest extending the knitted layer of Kevlar over the transducer (col. 15, lines 23-25). In other embodiments using the wound coil layer 110 instead of the knitted Kevlar, Hamm et al. disclose extending the wires through the window area 31 (col. 5, lines 38-51; col. 9, line 62-col. 10, lines 6; see Figure 3). Hamm et al. suggest having the knitted layer of Kevlar or the coil layer 110 alternative over or adjacent the transducer. There is no suggestion that the tip portion with the transducer be free of the non-conductive braid.

Independent claim 10 has been changed to correspond to claim 12 as originally filed without amendment. Claim 10 requires that the non-conductive insert is embedded within the shaft. Conversely, Hamm et al. suggest a knitted layer of Kevlar (col. 15, lines 17-18) adjacent a tubular wall. The layer of Kevlar is used in place of the wound coil layer 110 (col. 15, lines 17-25). The outer tubular wall member 29 incorporates or is associated with the helical coil 110 that extends to connect with the tip (col. 5, lines 31-38; col. 7, lines 45-52). The outer tubular wall 29 includes inner and outer layers 9 and 10 (col. 7, lines 28-30). The overall thickness of the tubular wall 29 comprises the inner and outer layers 9 and 10 (col. 7, lines 40-44). The coil layer 110 is bonded to or biased outward towards the tubular wall 29 (col. 7, lines 47-55). Figure 1a shows this layering where the coil layer 110 or alternative knitted Kevlar layer is attached to or biased against the tubular wall. Hamm et al. do not suggest embedding any non-conductive insert within the shaft as required by claim 10.

The dependent claims 1-9, 11-14 and 30-37 are allowable for the reasons stated above for independent claims 1, 10 and 29. Furthermore, limitations of these dependent claims further distinguish the claims. For example, Hamm et al. do not suggest embedding the non-conductive braid within the shaft as claimed in claims 5 and 33 (see discussion for claim 10 above). Furthermore, Hamm et al. disclose using knitted Kevlar to transmit torque and tension. Other materials disclosed for transmitting torque are metal wires. Kevlar is a very specific trade name and there is no suggestion that other materials provide the torque and tension desired by Hamm et al. The Examiner does not provide a basis for the statement that monofilament, monofilament nylon or monofilament liquid crystal polymer are known shaft materials. The claims require that these materials be used for the non-conductive insert or braid, not the shaft material. Accordingly, claims 2-3, 11, 30-31 and 36-37 are not suggested by Hamm et al.

how to respond to these dependent claims

Claims 15-28 and 38-47:

Claims 15-28 and 38-47, including independent claims 15, 24 and 38, were rejected as being anticipated or obvious over Hamm et al. Applicants respectfully request reconsideration of the rejections for these claims for the reasons discussed below.

Independent claims 15 and 24 require a dielectric solid film. Hamm et al. do not suggest a dielectric solid film. Hamm et al. disclose a sonolucent fluid 12 that fills the gap between a solid couplant 11 and a wound flat wire coil layer 110 (col. 10, lines 34-38). In an example, the sonolucent fluid 12 comprises silicone oil. Sonolucent fluid 12 is used to acoustically match the solid couplant to the coil layer. Air disrupts the transmission of acoustic energy between layers due to poor acoustic matching. Hamm et al. teach using a fluid for acoustic matching. Hamm et al. do not suggest using a dielectric solid film, such as a polyester film, a sheet, a tape, a tube or other dielectric solid film.

Independent claim 38 requires a dielectric film around at least a portion of a circumference and one end of the ultrasound transducer. Hamm et al. do not suggest a dielectric film in the claimed position. As discussed above and cited by the Examiner, Hamm et al. disclose a sonolucent fluid 12. The silicone oil 12 is between the trunnion 4 and the cylinder 6 at a transition section 34 away from the transducer (col. 9, lines 14-15) and is at the gap between the solid couplant 11 and coil layer 110 near the transducer (col. 10, 34-38). The gap between the trunnion 4 and cylinder 6 is not clearly shown as admitted by Hamm et al. (col. 9, lines 9-10). As shown in Figure 2, the cross section of the catheter shows the sonolucent fluid 12 around the transducer 22 in a layer along the outer wall (see also col. 9, line 62-col. 10, line 1). However, Hamm et al. do not suggest a dielectric film around at least a portion of a circumference and one end of the ultrasound transducer.

The dependent claims 16-23, 25-28 and 39-47 are allowable for the reasons stated above for independent claims 15, 24 and 38. Furthermore, limitations of these dependent claims further distinguish the claims.

Make allowable → Claim 16, like allowable claim 25, requires positioning of the dielectric film between a lens and the transducer. There is no suggestion in Hamm et al. to use a lens with dielectric film between the lens and the transducer.

Claims 17-19, 26 and 39-40 require that the dielectric film comprise one of a tape material, polyester film or Mylar. As discussed above, Hamm et al. suggest sonolucent fluids for transmitting acoustic energy, but do not suggest using dielectric materials. A person of

ordinary skill in the art would not have substituted dielectrics, such as dielectric tape, polyester or Mylar, where Hamm et al. teach using sonolucent fluid.

Claims 43-45, similar to independent claim 38, require that the dielectric film surrounds at least portions of both ends of the ultrasound transducer. As discussed above, Hamm et al. do not disclose the sonolucent fluid around the end of the transducer.

New Claim 48:

New claim 48 corresponds to claim 25 as originally filed without any amendments. The Examiner indicated that this claim was allowable.

Conclusion:

Applicants respectfully submit that all of the pending claims are in condition for allowance and seeks early allowance thereof. If for any reason, the Examiner is unable to allow the application but believes that an interview would be helpful to resolve any issues, he is respectfully requested to call the undersigned at (312) 321-4726.

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